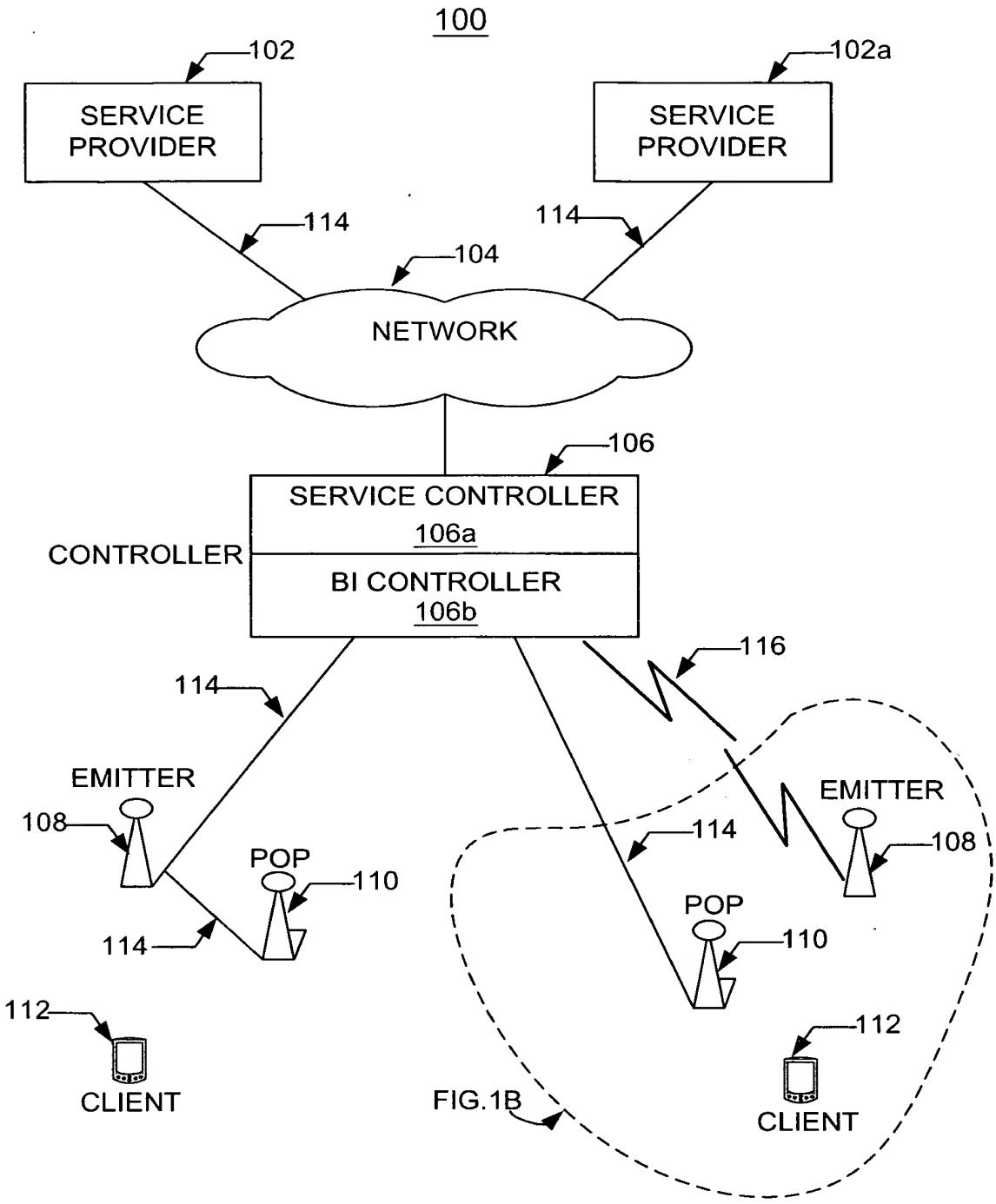
100
102
SERVICE PROVIDER
102a
SERVICE PROVIDER
114
114
104
NETWORK
106
SERVICE CONTROLLER
106a
CONTROLLER
BI CONTROLLER
106b
116
114
EMITTER
108
POP
110
114
112
CLIENT
EMITTER
108
114
POP
110
112
CLIENT
FIG.1B

FIG. 1A

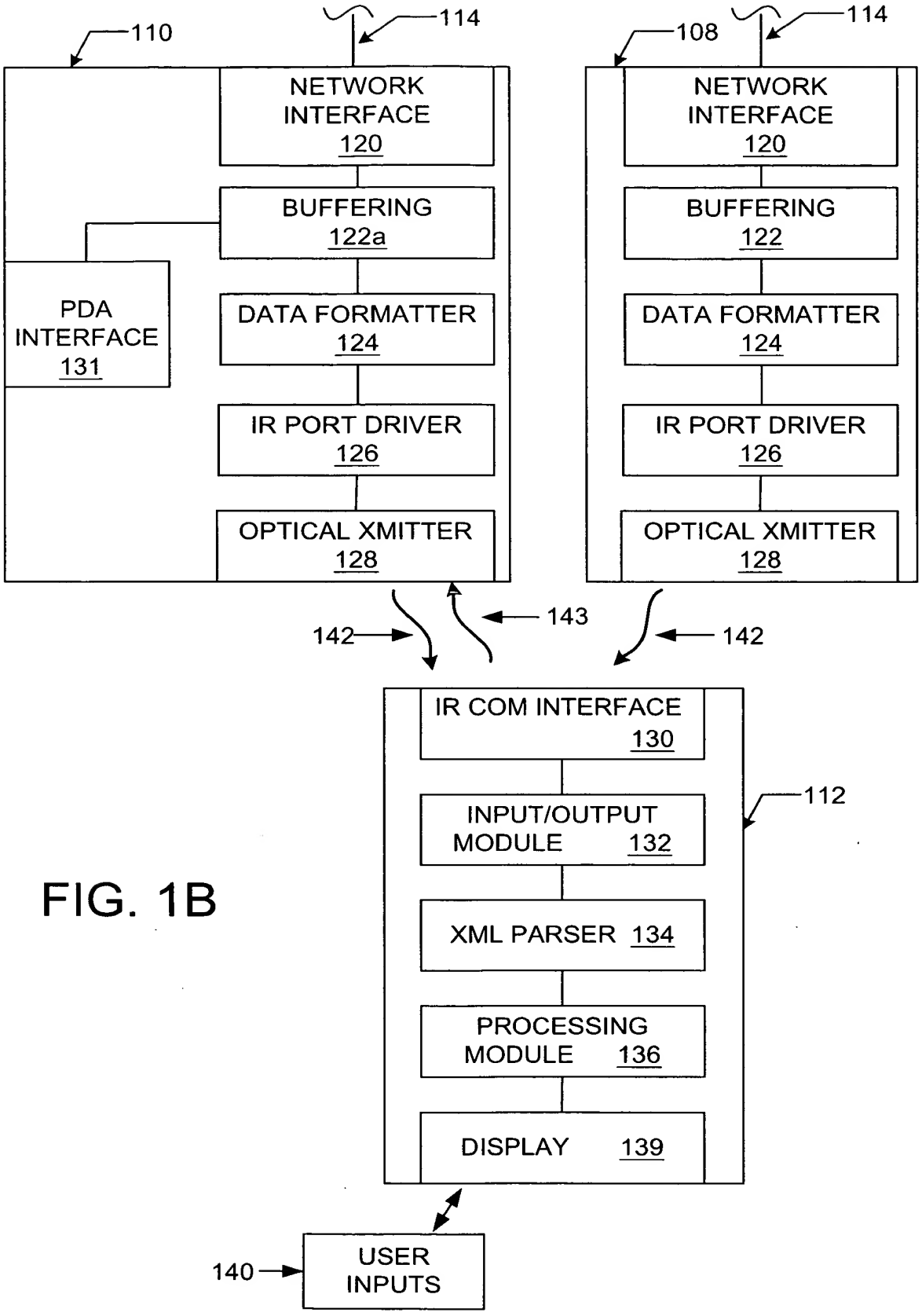
110
114
NETWORK INTERFACE 120
BUFFERING 122a
PDA INTERFACE 131
DATA FORMATTER 124
IR PORT DRIVER 126
OPTICAL XMITTER 128
108
114
NETWORK INTERFACE 120
BUFFERING 122
DATA FORMATTER 124
IR PORT DRIVER 126
OPTICAL XMITTER 128
142
143
142
IR COM INTERFACE 130
INPUT/OUTPUT MODULE 132
XML PARSER 134
PROCESSING MODULE 136
DISPLAY 139
112
140
USER INPUTS

FIG. 1B

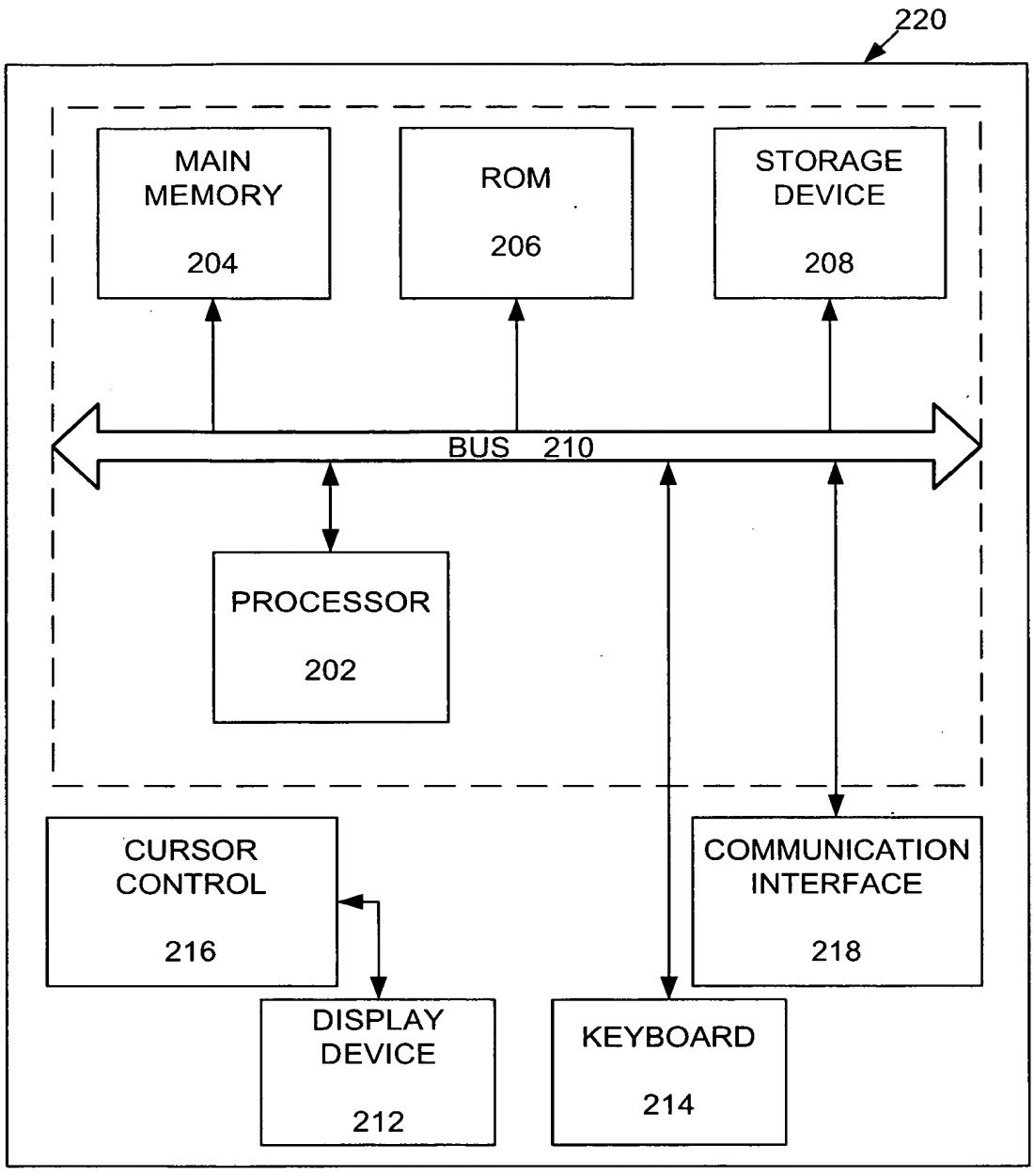
220
MAIN MEMORY 204
ROM 206
STORAGE DEVICE 208
BUS 210
PROCESSOR 202
CURSOR CONTROL 216
COMMUNICATION INTERFACE 218
DISPLAY DEVICE 212
KEYBOARD 214

FIG. 2

Replacement Sheet

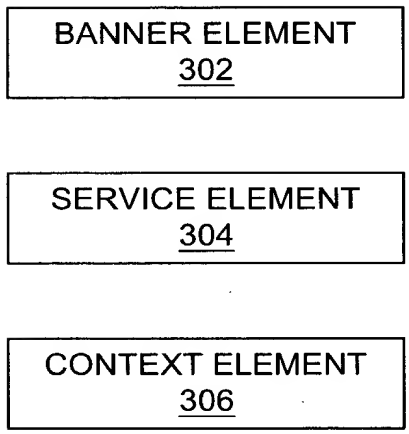

FIG. 3

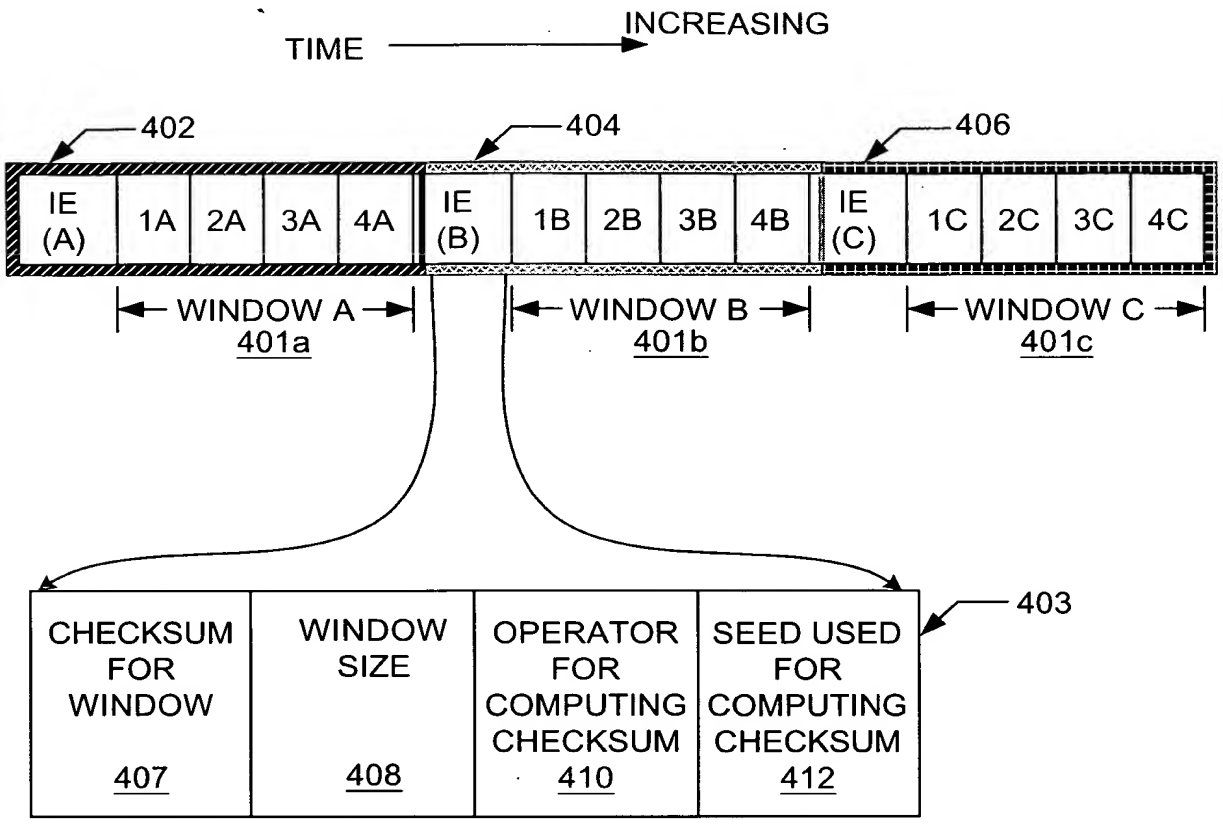
TIME
INCREASING
402
404
406
IE (A)
1A
2A
3A
4A
IE (B)
1B
2B
3B
4B
IE (C)
1C
2C
3C
4C
WINDOW A
401a
WINDOW B
401b
WINDOW C
401c
403
CHECKSUM FOR WINDOW
407
WINDOW SIZE
408
OPERATOR FOR COMPUTING CHECKSUM
410
SEED USED FOR COMPUTING CHECKSUM
412

FIG. 4A

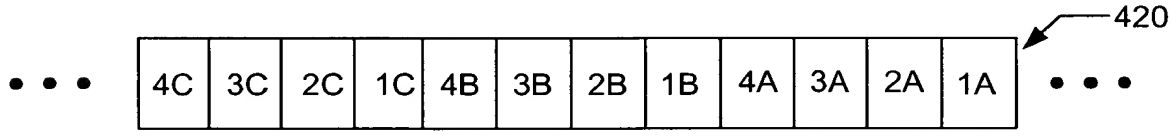
420
4C
3C
2C
1C
4B
3B
2B
1B
4A
3A
2A
1A

FIG. 4B

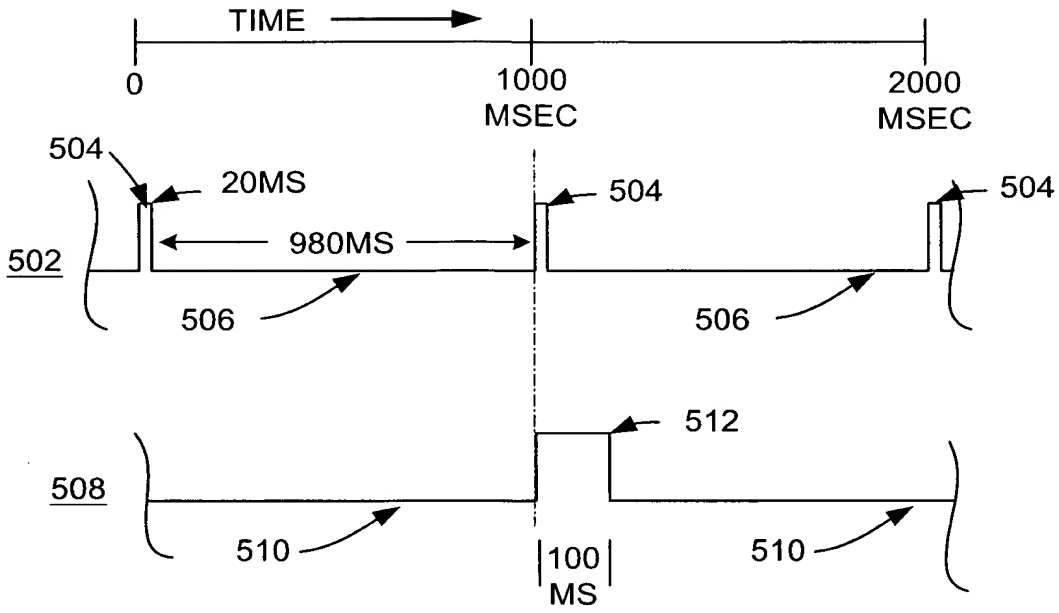
TIME
0
1000
MSEC
2000
MSEC
504
20MS
980MS
504
504
502
506
506
512
508
510
100
MS
510

FIG. 5

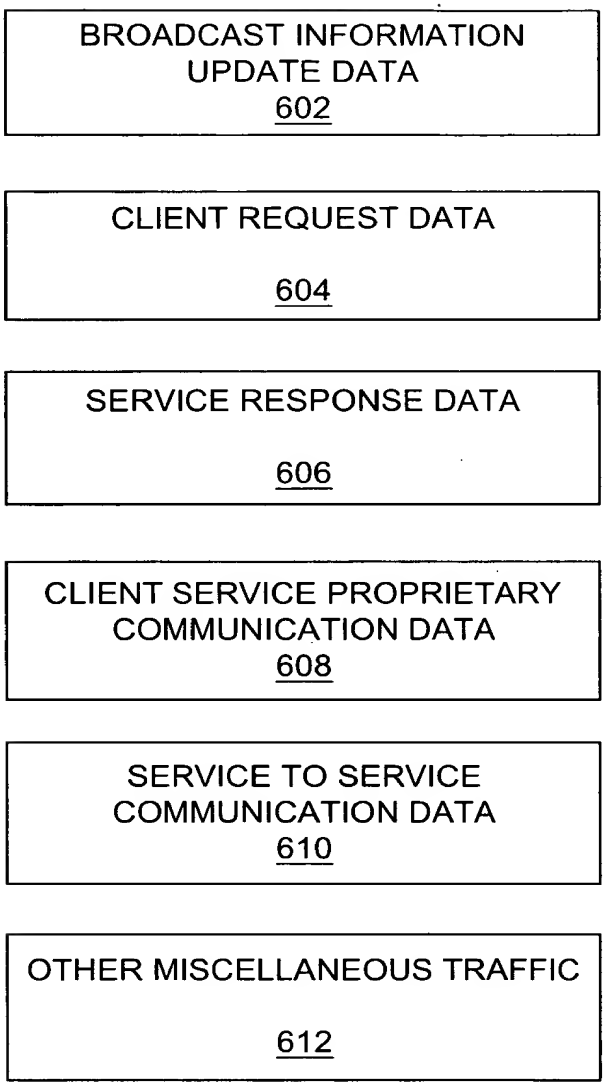
BROADCAST INFORMATION UPDATE DATA
602
CLIENT REQUEST DATA
604
SERVICE RESPONSE DATA
606
CLIENT SERVICE PROPRIETARY COMMUNICATION DATA
608
SERVICE TO SERVICE COMMUNICATION DATA
610
OTHER MISCELLANEOUS TRAFFIC
612

FIG. 6

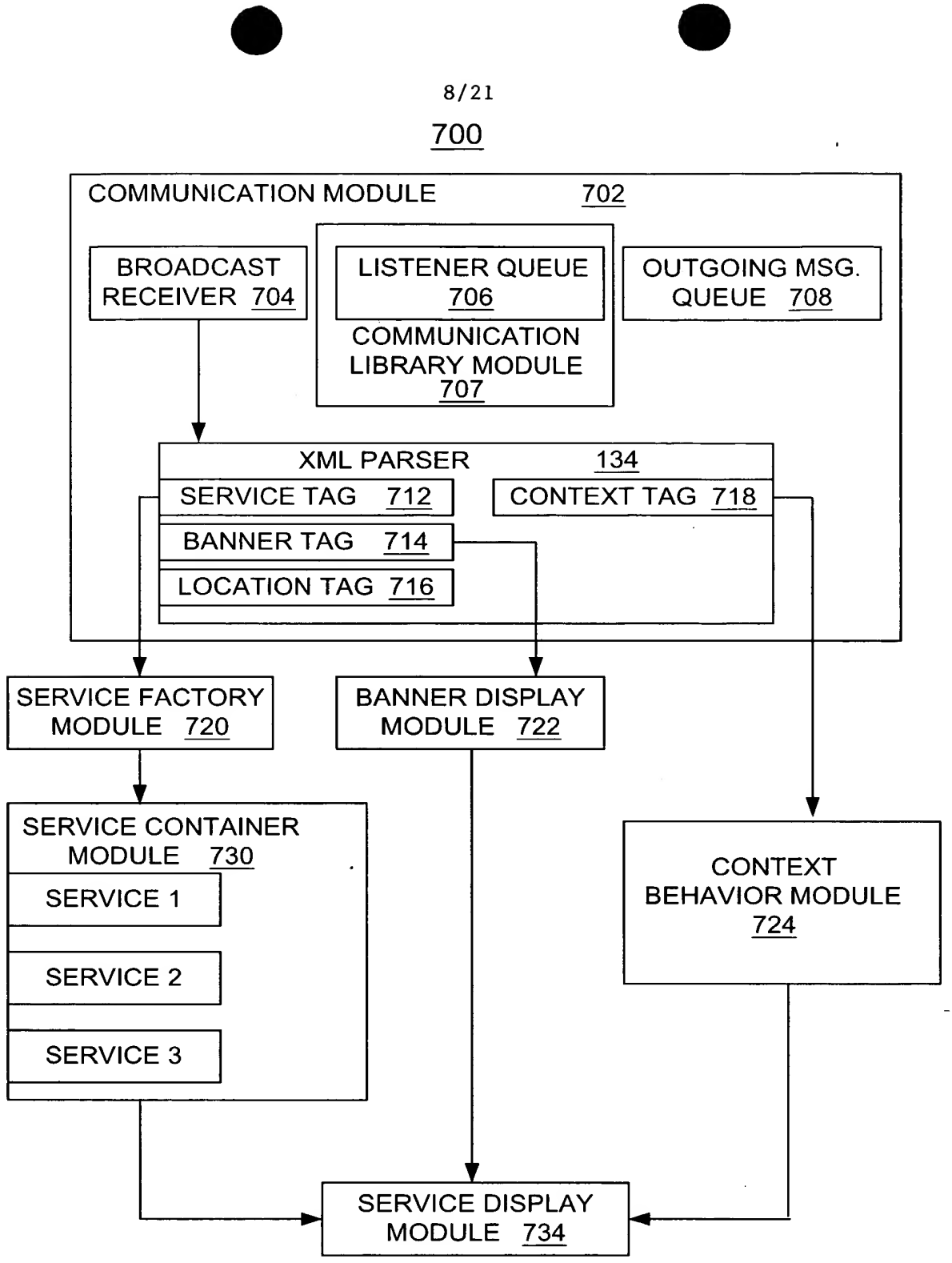
700
COMMUNICATION MODULE 702
BROADCAST RECEIVER 704
LISTENER QUEUE 706
COMMUNICATION LIBRARY MODULE 707
OUTGOING MSG. QUEUE 708
XML PARSER 134
SERVICE TAG 712
CONTEXT TAG 718
BANNER TAG 714
LOCATION TAG 716
SERVICE FACTORY MODULE 720
BANNER DISPLAY MODULE 722
SERVICE CONTAINER MODULE 730
SERVICE 1
SERVICE 2
SERVICE 3
CONTEXT BEHAVIOR MODULE 724
SERVICE DISPLAY MODULE 734

FIG. 7

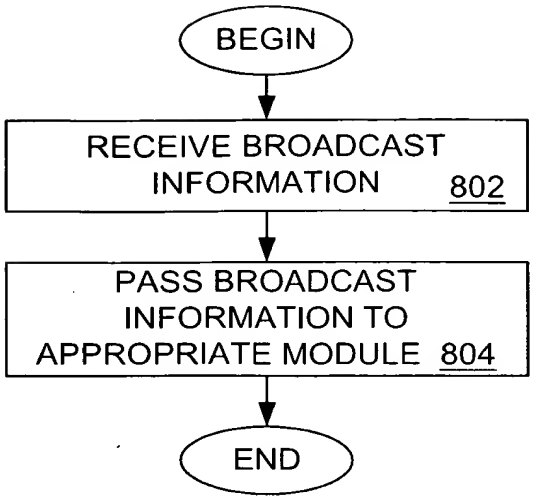
BEGIN
RECEIVE BROADCAST INFORMATION 802
PASS BROADCAST INFORMATION TO APPROPRIATE MODULE 804
END

FIG. 8A

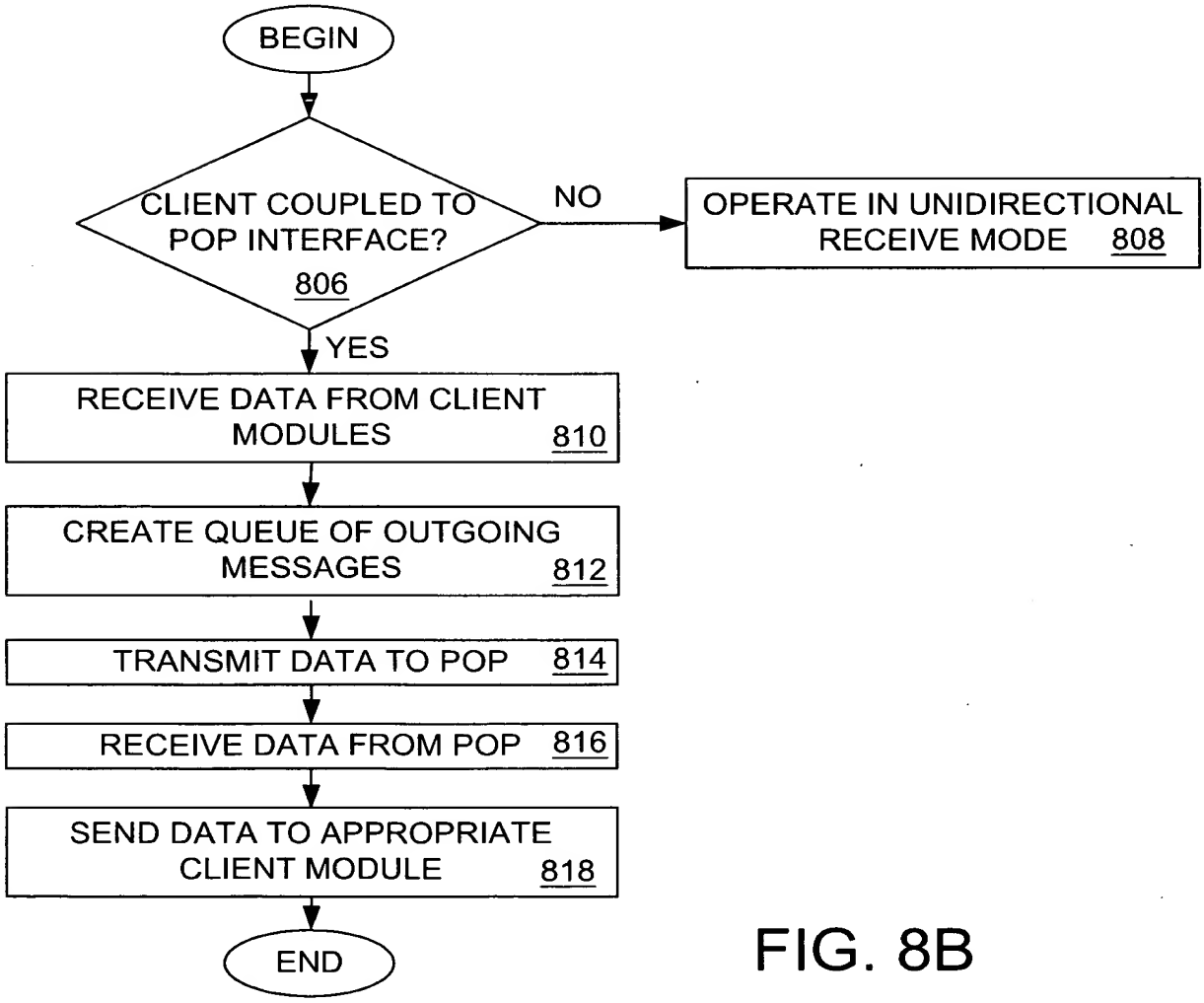
BEGIN
CLIENT COUPLED TO POP INTERFACE? 806
NO
OPERATE IN UNIDIRECTIONAL RECEIVE MODE 808
YES
RECEIVE DATA FROM CLIENT MODULES 810
CREATE QUEUE OF OUTGOING MESSAGES 812
TRANSMIT DATA TO POP 814
RECEIVE DATA FROM POP 816
SEND DATA TO APPROPRIATE CLIENT MODULE 818
END

FIG. 8B

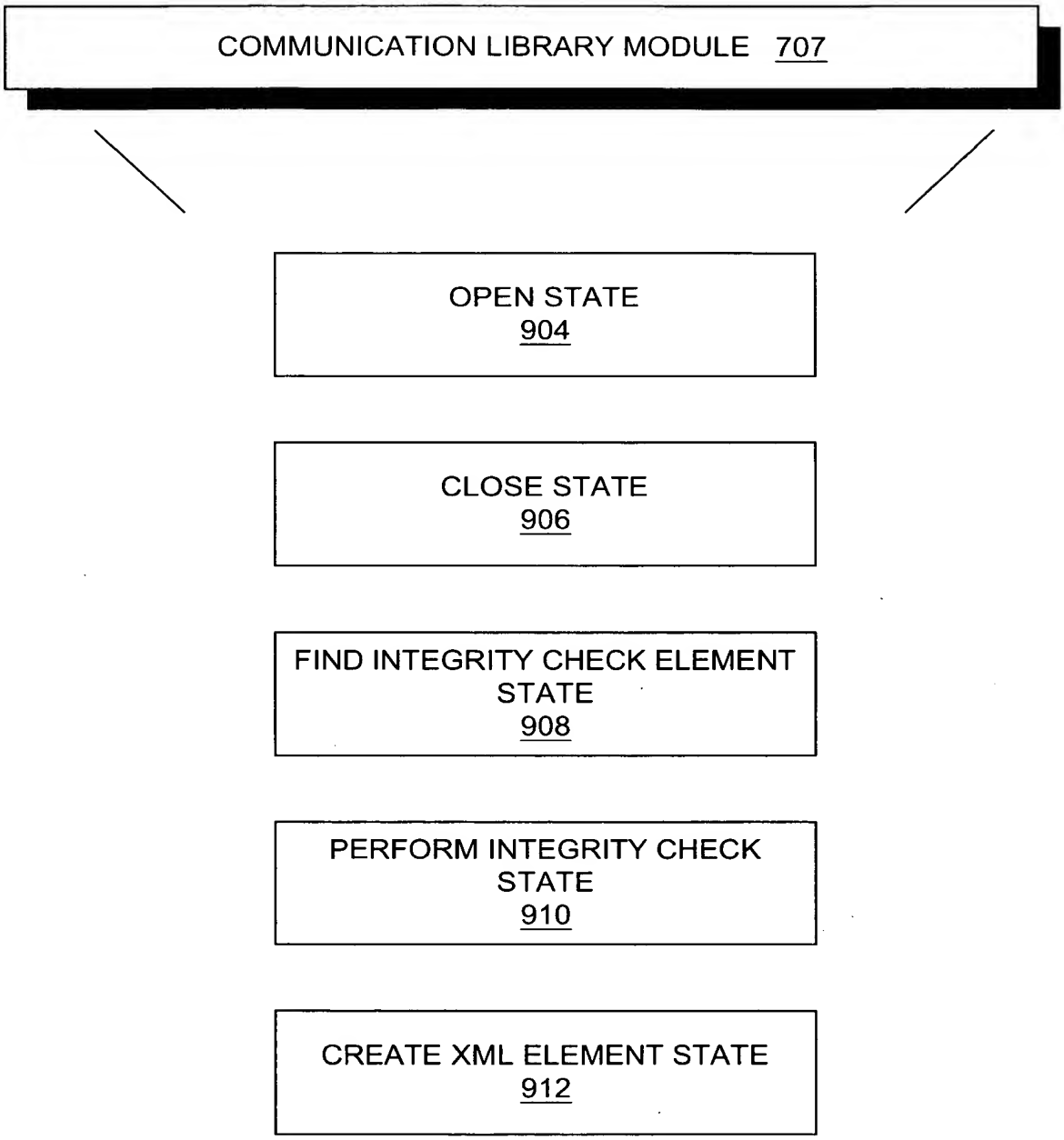
COMMUNICATION LIBRARY MODULE 707
OPEN STATE
904
CLOSE STATE
906
FIND INTEGRITY CHECK ELEMENT STATE
908
PERFORM INTEGRITY CHECK STATE
910
CREATE XML ELEMENT STATE
912

FIG. 9

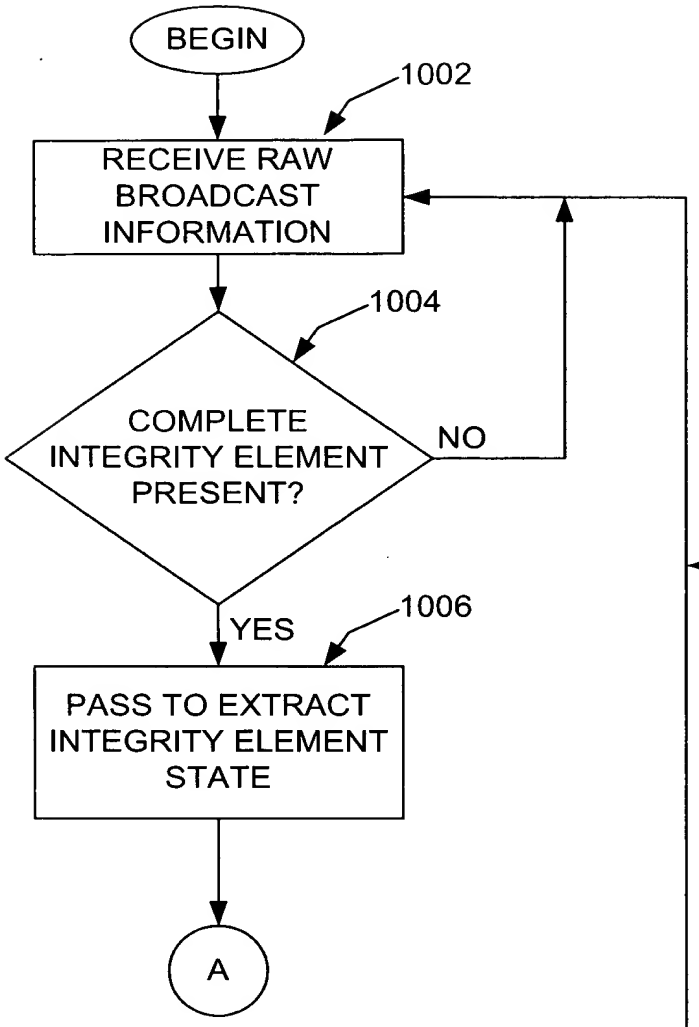

FIG. 10A

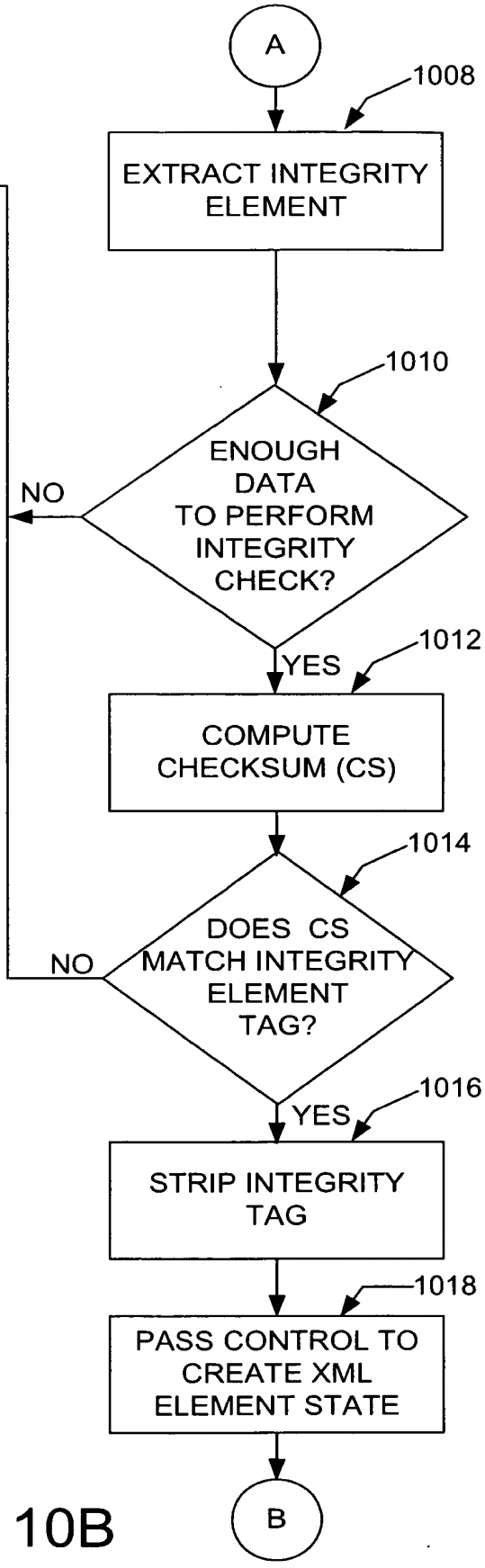

FIG. 10B

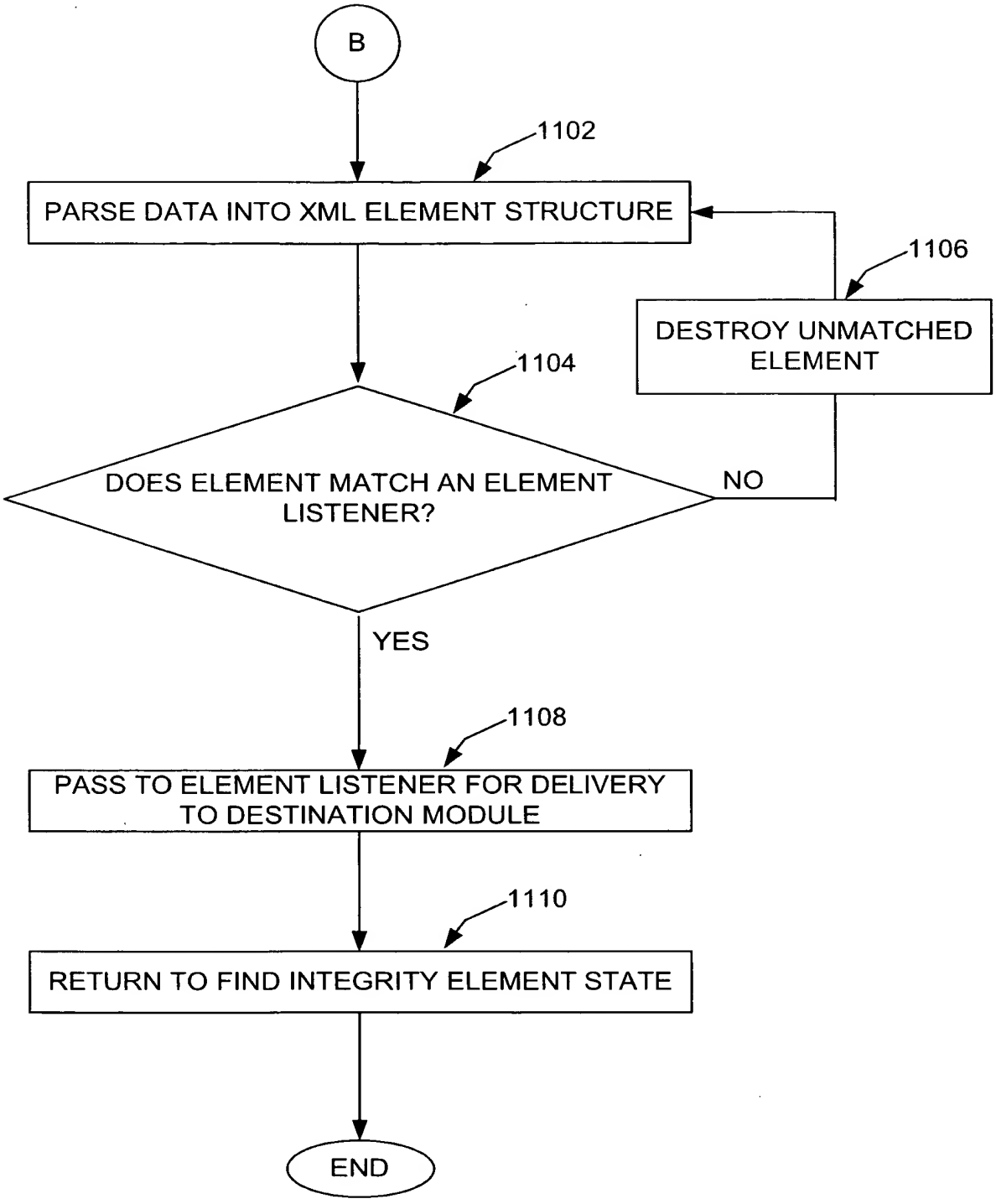
B
1102
PARSE DATA INTO XML ELEMENT STRUCTURE
1106
DESTROY UNMATCHED ELEMENT
1104
DOES ELEMENT MATCH AN ELEMENT LISTENER?
NO
YES
1108
PASS TO ELEMENT LISTENER FOR DELIVERY TO DESTINATION MODULE
1110
RETURN TO FIND INTEGRITY ELEMENT STATE
END

FIG. 11

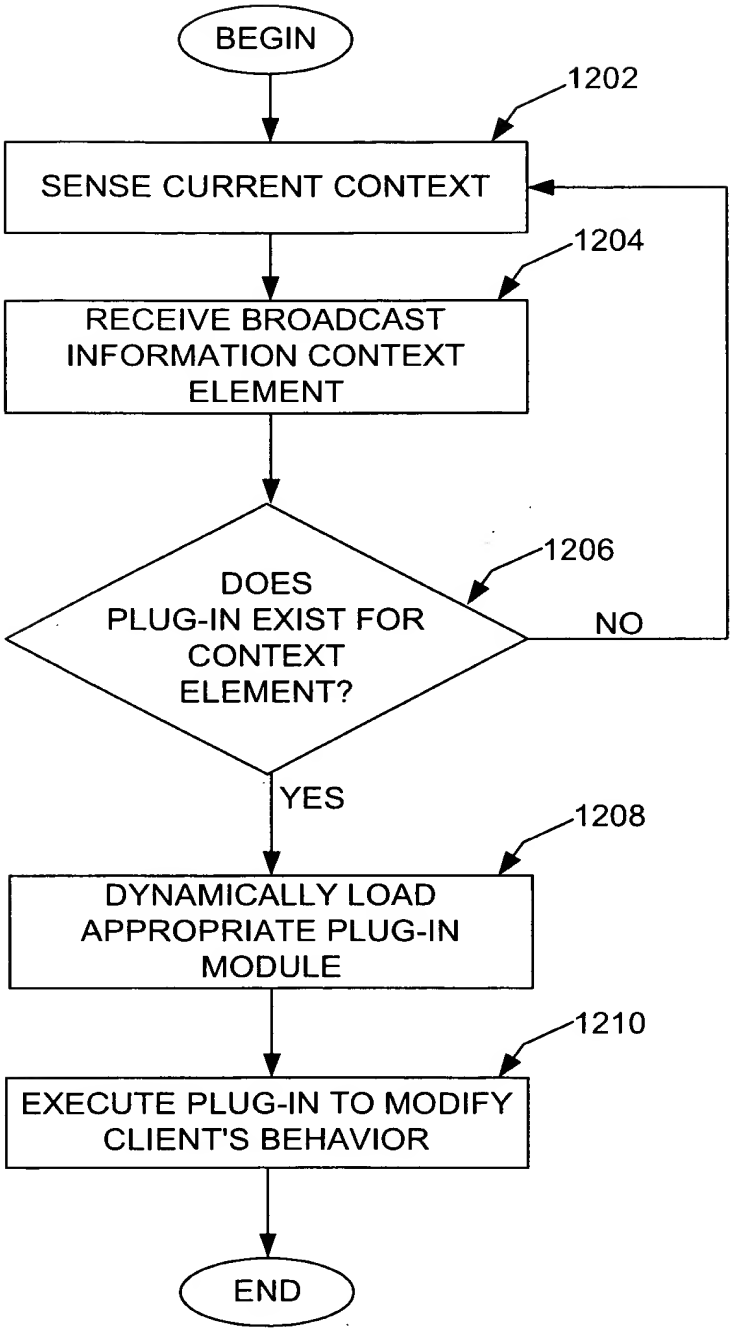
BEGIN
1202
SENSE CURRENT CONTEXT
1204
RECEIVE BROADCAST INFORMATION CONTEXT ELEMENT
1206
DOES PLUG-IN EXIST FOR CONTEXT ELEMENT?
NO
YES
1208
DYNAMICALLY LOAD APPROPRIATE PLUG-IN MODULE
1210
EXECUTE PLUG-IN TO MODIFY CLIENT'S BEHAVIOR
END

FIG. 12

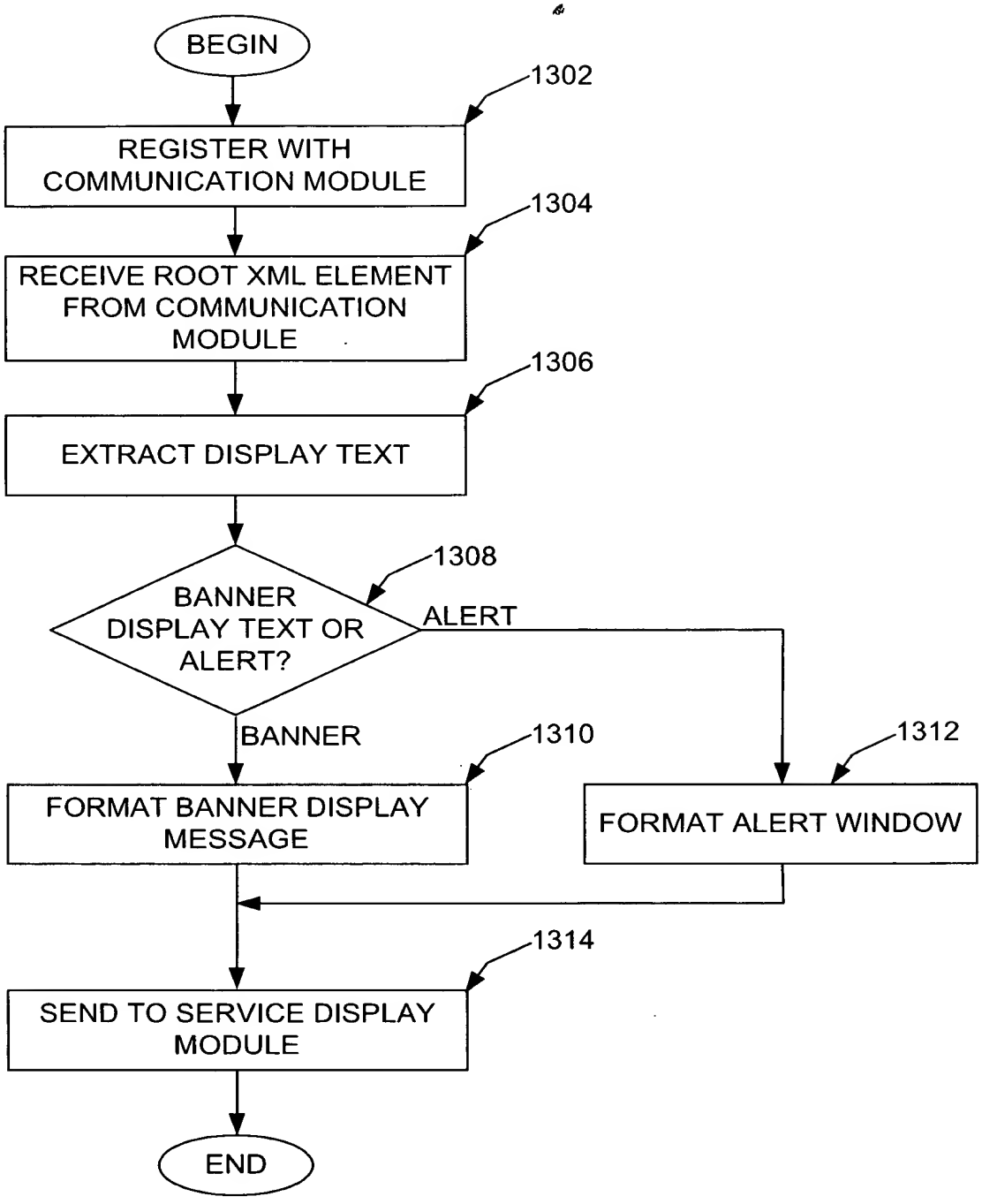
BEGIN
1302
REGISTER WITH COMMUNICATION MODULE
1304
RECEIVE ROOT XML ELEMENT FROM COMMUNICATION MODULE
1306
EXTRACT DISPLAY TEXT
1308
BANNER DISPLAY TEXT OR ALERT?
ALERT
BANNER
1310
FORMAT BANNER DISPLAY MESSAGE
1312
FORMAT ALERT WINDOW
1314
SEND TO SERVICE DISPLAY MODULE
END

FIG. 13

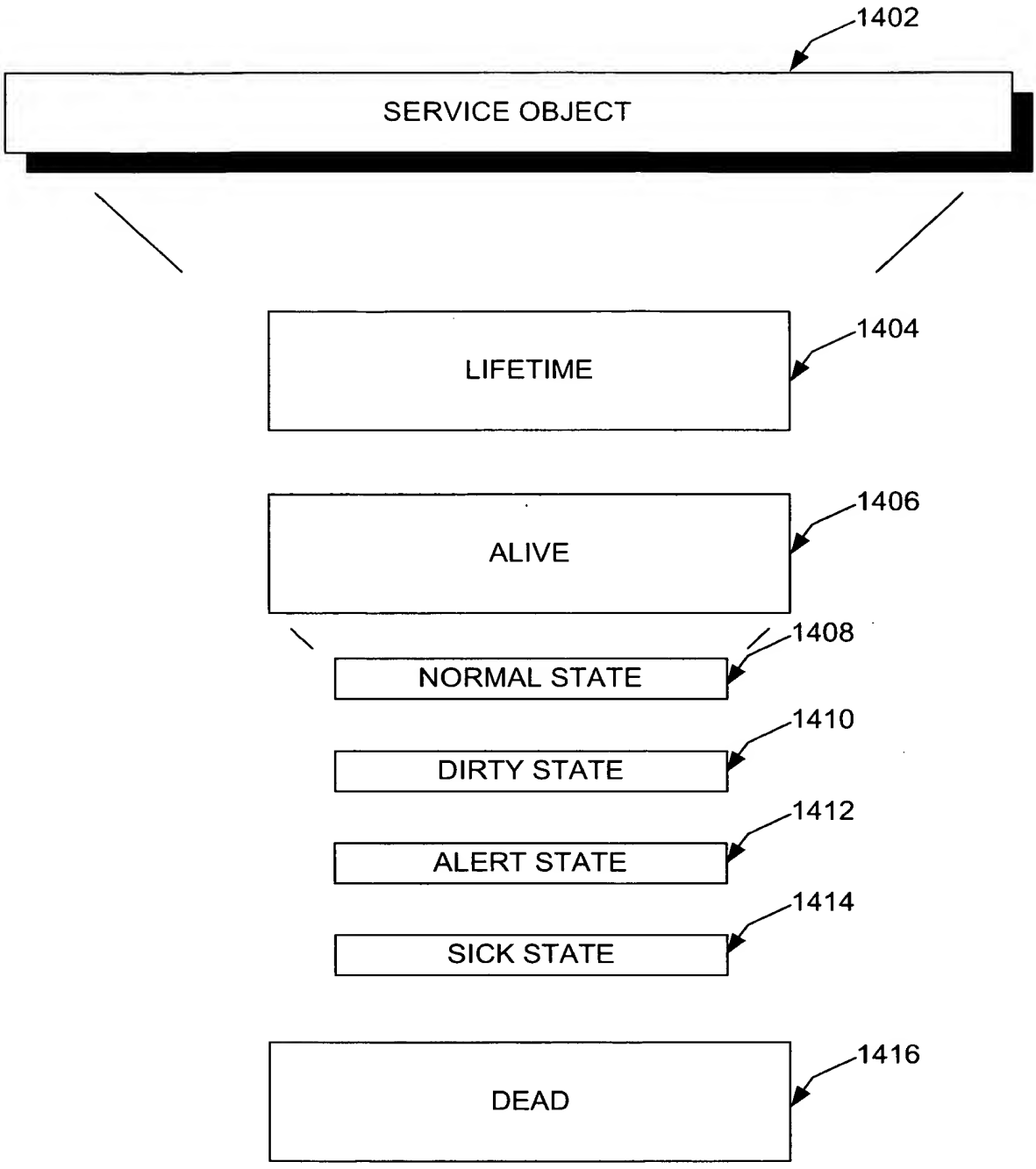
1402
SERVICE OBJECT
LIFETIME
1404
ALIVE
1406
NORMAL STATE
1408
DIRTY STATE
1410
ALERT STATE
1412
SICK STATE
1414
DEAD
1416

FIG. 14

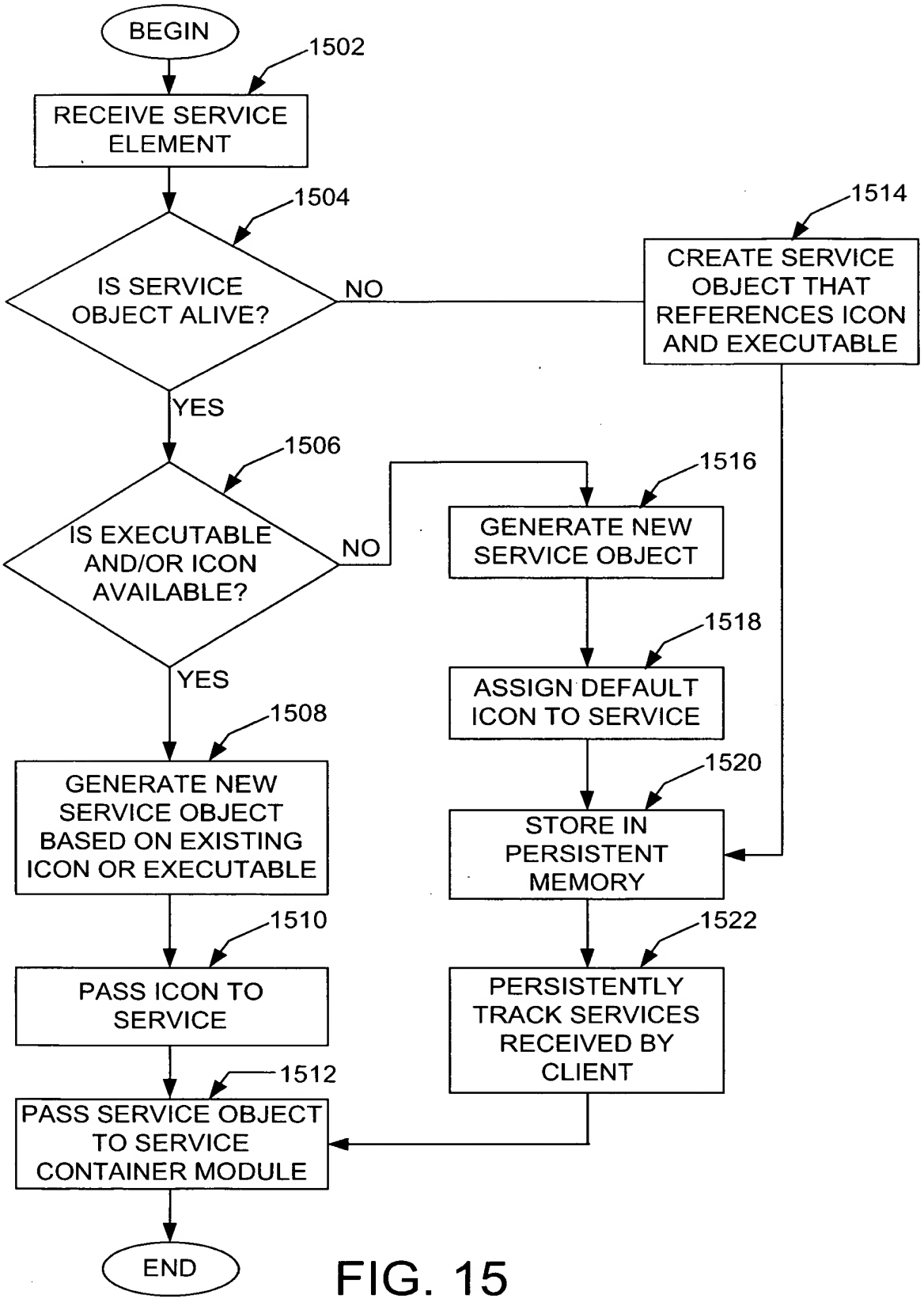
BEGIN
1502
RECEIVE SERVICE ELEMENT
1504
IS SERVICE OBJECT ALIVE?
NO
1514
CREATE SERVICE OBJECT THAT REFERENCES ICON AND EXECUTABLE
YES
1506
IS EXECUTABLE AND/OR ICON AVAILABLE?
NO
1516
GENERATE NEW SERVICE OBJECT
1518
ASSIGN DEFAULT ICON TO SERVICE
YES
1508
GENERATE NEW SERVICE OBJECT BASED ON EXISTING ICON OR EXECUTABLE
1520
STORE IN PERSISTENT MEMORY
1510
PASS ICON TO SERVICE
1522
PERSISTENTLY TRACK SERVICES RECEIVED BY CLIENT
1512
PASS SERVICE OBJECT TO SERVICE CONTAINER MODULE
END

FIG. 15

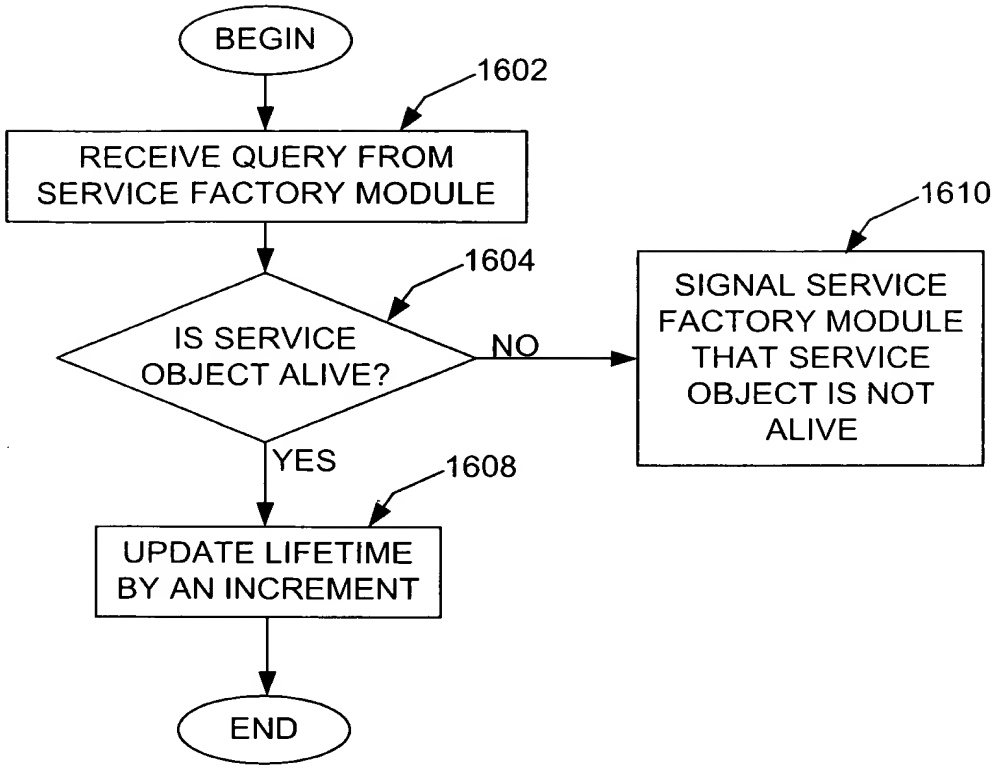

FIG. 16A

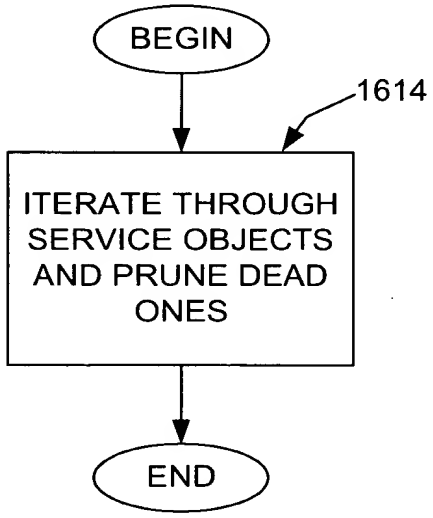

FIG. 16B

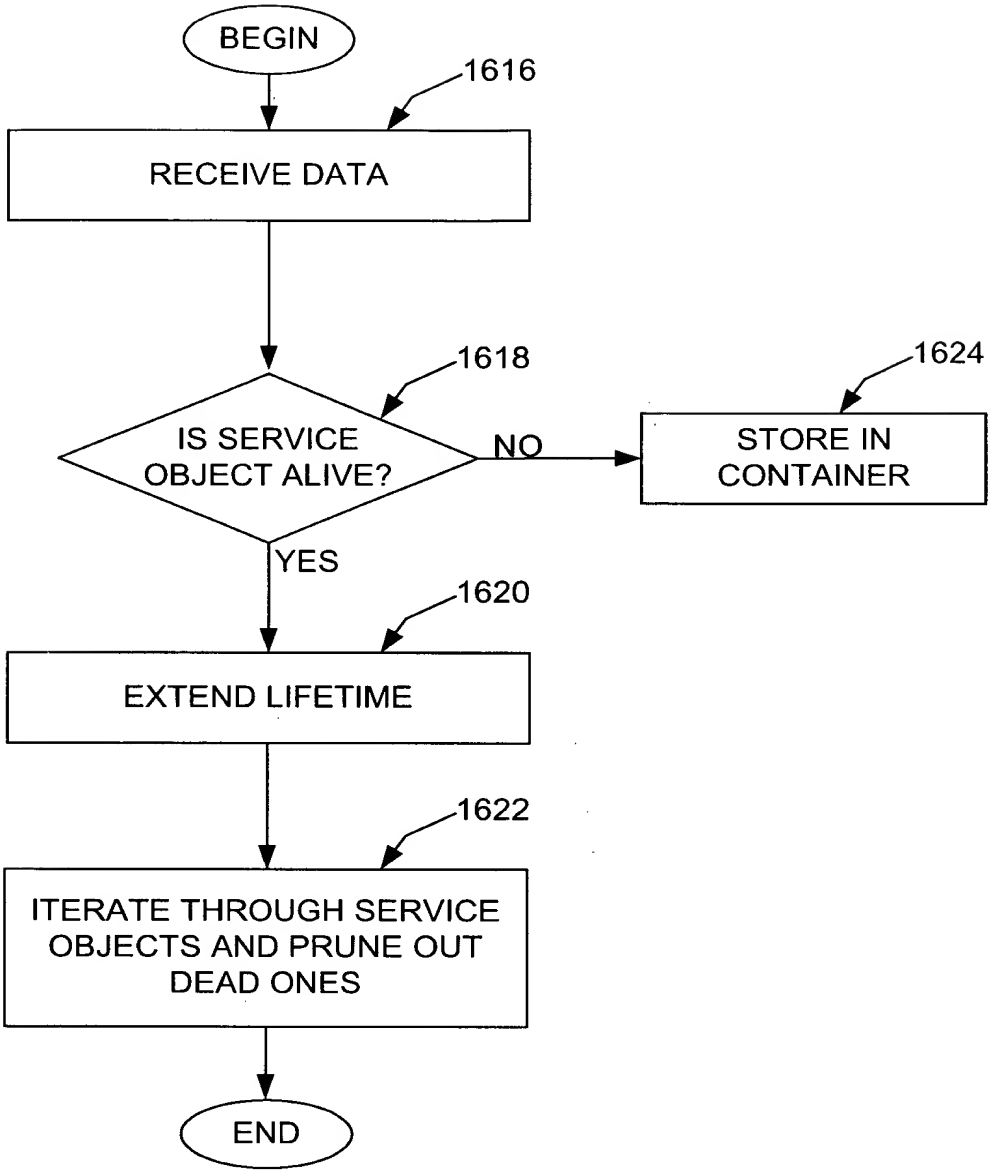
BEGIN
1616
RECEIVE DATA
1618
IS SERVICE OBJECT ALIVE?
NO
1624
STORE IN CONTAINER
YES
1620
EXTEND LIFETIME
1622
ITERATE THROUGH SERVICE OBJECTS AND PRUNE OUT DEAD ONES
END

FIG. 16C

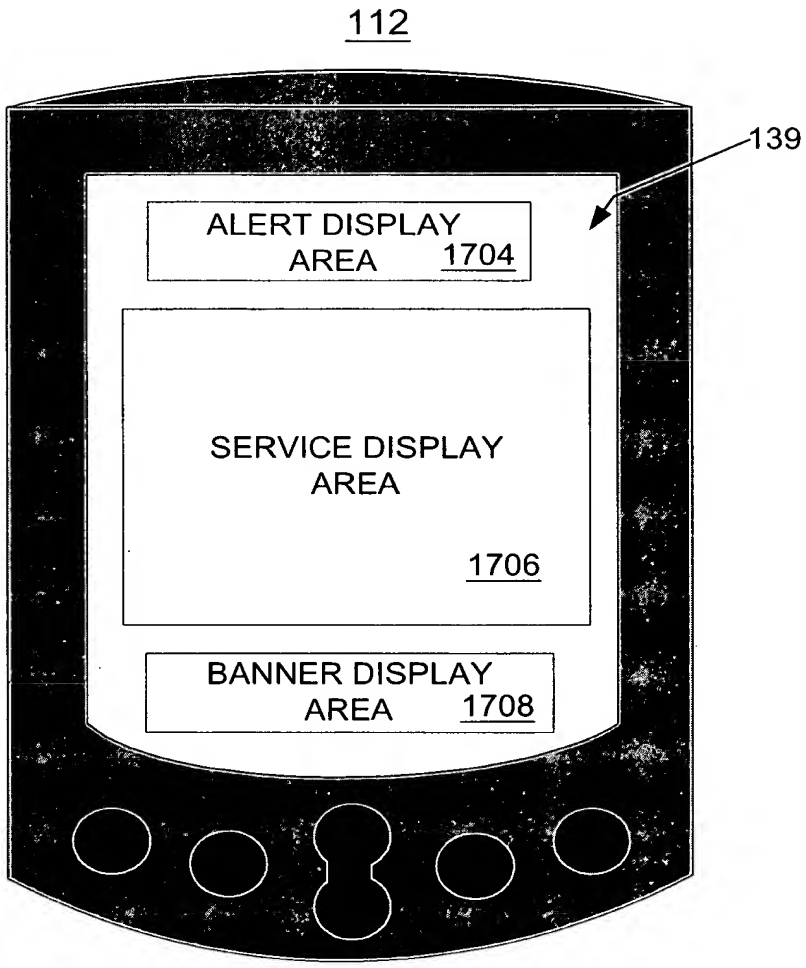
112
139
ALERT DISPLAY AREA 1704
SERVICE DISPLAY AREA
1706
BANNER DISPLAY AREA 1708

FIG. 17

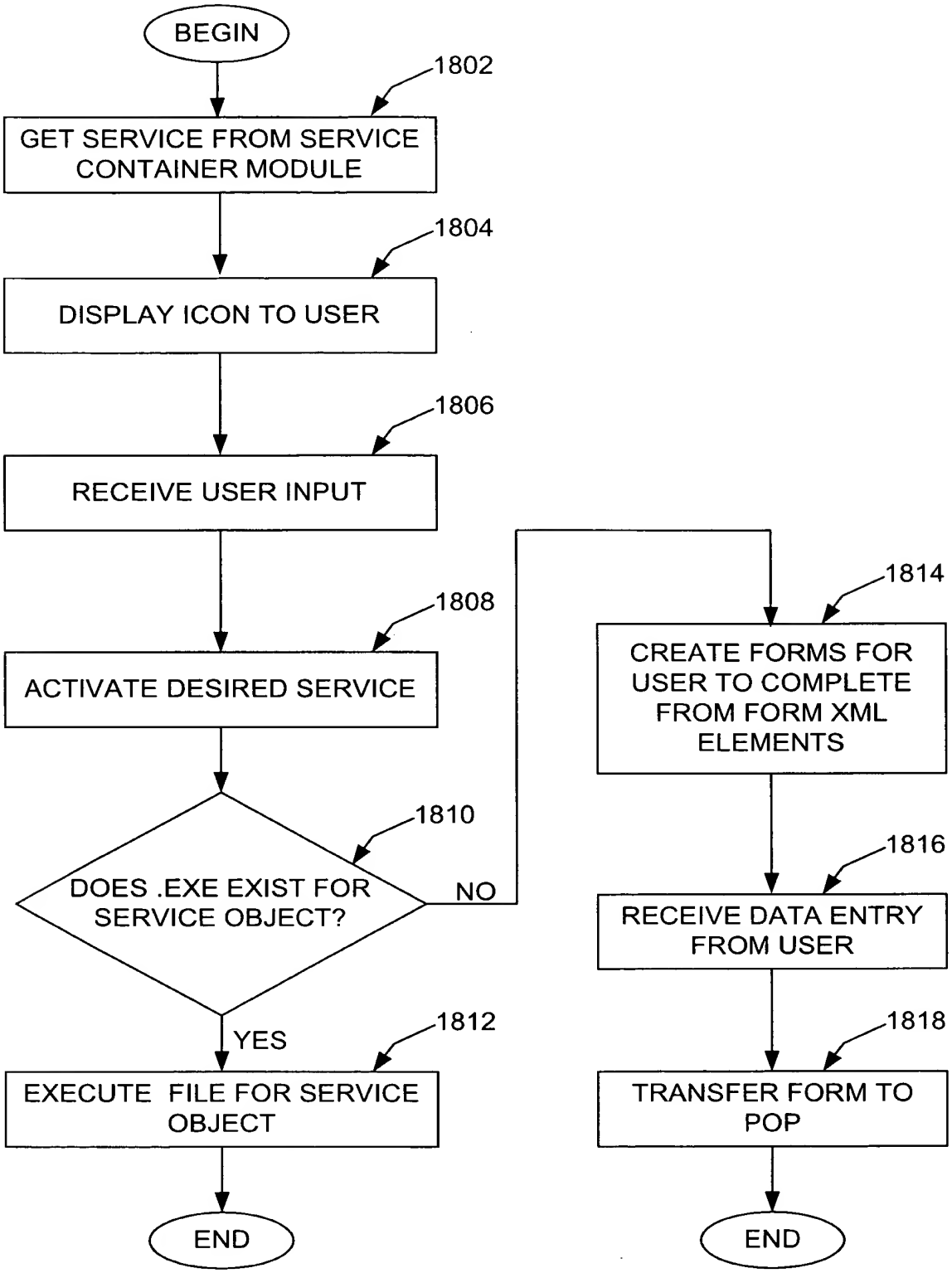
BEGIN
1802
GET SERVICE FROM SERVICE CONTAINER MODULE
1804
DISPLAY ICON TO USER
1806
RECEIVE USER INPUT
1808
ACTIVATE DESIRED SERVICE
1810
DOES .EXE EXIST FOR SERVICE OBJECT?
NO
YES
1812
EXECUTE FILE FOR SERVICE OBJECT
END
1814
CREATE FORMS FOR USER TO COMPLETE FROM FORM XML ELEMENTS
1816
RECEIVE DATA ENTRY FROM USER
1818
TRANSFER FORM TO POP
END

FIG. 18

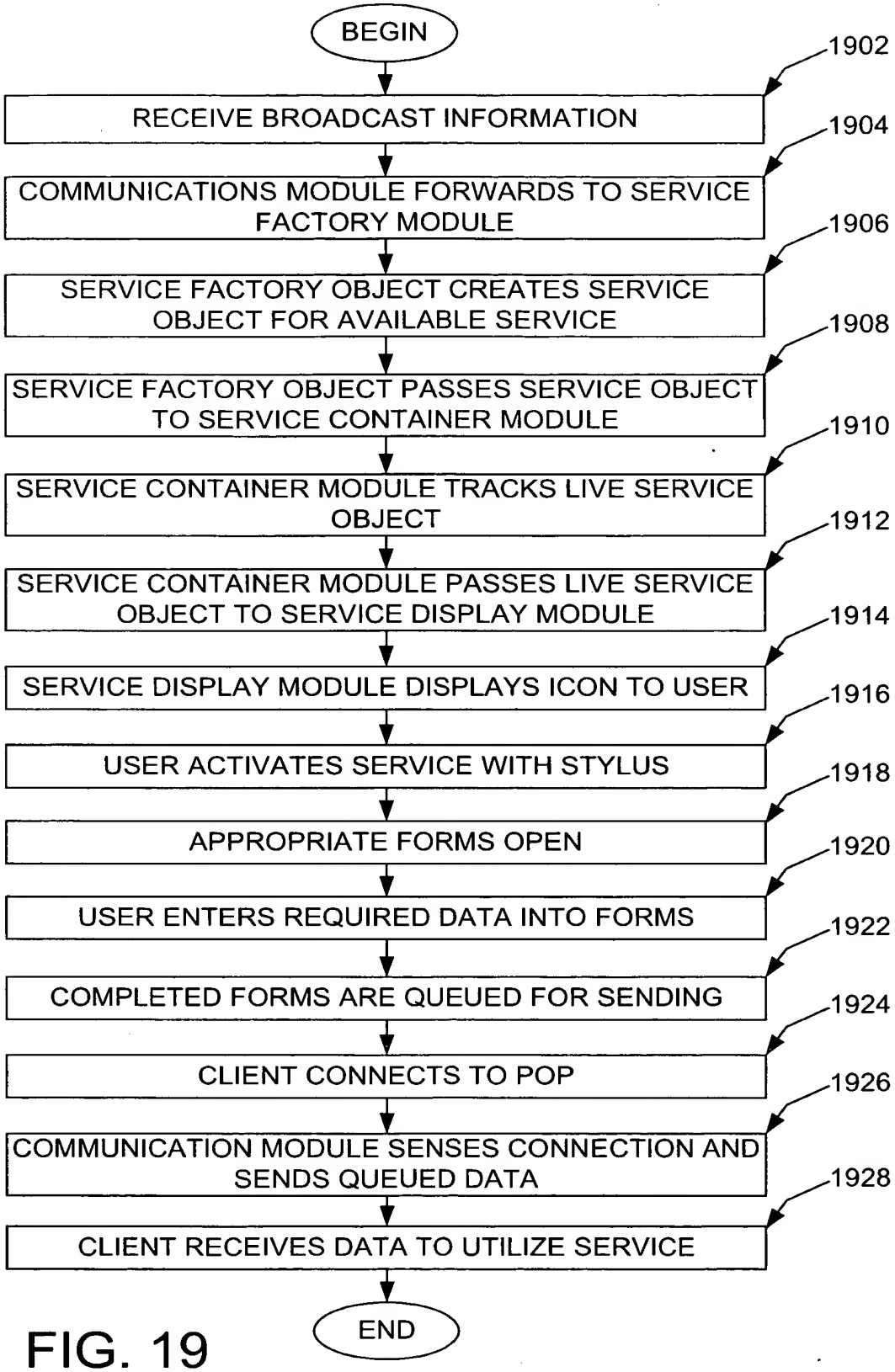
BEGIN
1902
RECEIVE BROADCAST INFORMATION
1904
COMMUNICATIONS MODULE FORWARDS TO SERVICE FACTORY MODULE
1906
SERVICE FACTORY OBJECT CREATES SERVICE OBJECT FOR AVAILABLE SERVICE
1908
SERVICE FACTORY OBJECT PASSES SERVICE OBJECT TO SERVICE CONTAINER MODULE
1910
SERVICE CONTAINER MODULE TRACKS LIVE SERVICE OBJECT
1912
SERVICE CONTAINER MODULE PASSES LIVE SERVICE OBJECT TO SERVICE DISPLAY MODULE
1914
SERVICE DISPLAY MODULE DISPLAYS ICON TO USER
1916
USER ACTIVATES SERVICE WITH STYLUS
1918
APPROPRIATE FORMS OPEN
1920
USER ENTERS REQUIRED DATA INTO FORMS
1922
COMPLETED FORMS ARE QUEUED FOR SENDING
1924
CLIENT CONNECTS TO POP
1926
COMMUNICATION MODULE SENSES CONNECTION AND SENDS QUEUED DATA
1928
CLIENT RECEIVES DATA TO UTILIZE SERVICE
END

FIG. 19